services. For the majority of UK children, length of stay (LOS) in hospital is brief and rehydration alone is sufficient. More complex support is sometimes needed in children with co-morbidities. **OBJECTIVES:** To compare the hospital burden (LOS and cost), of children with RVGE and RSV alone, and vulnerable children with co-morbidities. **METHODS:** Hospital data were obtained from the CHKS database between April 1, 2001 and March 31, 2008, where patients, aged <5 years, were admitted with a primary diagnosis of RVGE or RSV. Patients were categorised into three groups. G1: a primary diagnosis of RVGE/RSV, G2: controls with a primary diagnosis of eczema, G3: vulnerable children with a readmission for RVGE/RSV following a prior admission, within 30 days, with a primary diagnosis of type 1 diabetes (T1D), cystic fibrosis, cancer, or epilepsy. **RESULTS:** A total of 102,270 patients were selected, group one n=101,784 (mean age 0.2 years, LOS 1.9 days, cost £595), group two n=17,420, (mean age 1.1, LOS 1.7, cost £590), and group three n=486, (mean age 1.1, LOS 9.9, cost £3,477). Non-parametric tests showed that mean age, and hospital LOS were significantly different between groups 1 and 2 ($p<0.001$), while mean age, LOS, and cost were significantly different between groups 1 and 3 ($p<0.001$), and groups 2 and 3 ($p<0.001$). When adjusted for age, regression analysis showed that LOS was 5.2 times higher, and cost was 5.8 times higher in group 3 than group 1. **CONCLUSIONS:** This study shows that vulnerable children readmitted to hospital with RVGE/RSV, incur a greater LOS, and subsequent cost, compared to other groups. Universal rotavirus vaccination would substantially benefit vulnerable children through direct or indirect protection and reduce the healthcare resource use resulting from hospital readmissions.

PIH19

PUBLIC HEALTH COSTS ASSOCIATED WITH OUTBREAKS OF MENINGOCCOCAL DISEASE: A SYSTEMATIC REVIEW

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OBJECTIVES: Estimating the costs associated with outbreaks and the prevention of secondary cases of invasive meningococcal disease (IMD) is needed to understand the true economic burden of IMD. We aimed to review the costs associated with IMD outbreaks that occur globally. **METHODS:** Literature searches were conducted in MEDLINE and EMBASE using medical subject headings and key words, such as costs, outbreaks, and IMD. Studies were included if they reported the costs associated with IMD outbreaks and were written in English, French or Spanish. All costs were converted to USD 2010. **RESULTS:** A total of 1672 citations were screened and 323 were potentially relevant. Nine studies fulfilled the inclusion criteria and included IMD outbreaks with cost data from the US (n=4), England, Canada, Guinea, Burkina Faso and Australia (n=1 each) between November 1992 and November 2006. Three outbreaks occurred among high school children, one among boys aged 3-6 years, another among individuals aged <18 years, and two occurred among all ages. The majority were due to serogroup C (n=7/9). The median number of infected per outbreak was 8 (range: 3-2435). The attack rate ranged from <2 per 100,000 to 187 per 100,000, the hospitalization rate from 55.6% to 100%, and the death rate from 0% to 26%. Containment strategies ranged from targeting all members of the school where the outbreak occurred to targeting all students in the community. The overall average cost per containment was $2,368,135 (USD 2010) ranging from an average of $296,821 for small containment strategies (n=3) to $3,403,792 for large containment strategies (n=6). **CONCLUSIONS:** IMG outbreaks were associated with substantial costs. While numerous reports on outbreaks were identified, few reported on the containment costs. More research in this area is warranted, particularly to understand the economic value of new vaccines given that the purpose of vaccination is to prevent potential outbreaks.

PIH20

THE BURDEN OF ENDOMETRIOSIS: COSTS AND QUALITY OF LIFE OF WOMEN WITH ENDOMETRIOSIS TREATED IN REFERRAL CENTRES

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OBJECTIVES: Endometriosis (the presence of endometrial-like tissue outside the uterus) affects 10% of women of reproductive age and is associated with dysmenorrhoea, pain at ovulation, dyspareunia, abnormal bleeding, chronic pelvic pain, fatigue, and infertility. This study aimed to calculate costs and health-related quality of life of women with endometriosis-associated symptoms treated in referral centres. **METHODS:** A prospective, international, multi-centre questionnaire-based survey measured costs and health-related quality of life in ambulatory care and in 12 tertiary care centres in ten countries. The study enrolled women with a diagnosis of endometriosis and with at least one centre-specific contact related to endometriosis-associated symptoms in 2008. The main outcome measures included health care costs, costs of productivity loss, total costs and quality-adjusted life years. Predictors of costs were identified using regression analysis. **RESULTS:** Data analysis of 909 women (63% response rate) demonstrated that the average annual total cost per woman was €9,579 (95% CI €8,559-€10,599). Costs of productivity loss of €6298 per woman were double the health care costs (€3113 per woman). Health care costs were mainly due to surgery (29%), monitoring tests (19%) and hospitalization (18%). The cost of medication accounted for 10% of health care costs. At a prevalence rate of 7%, the annual burden of endometriosis-associated symptoms ranged from €0.8 billion in Denmark to €50 billion in the United States. Endometriosis-associated symptoms generated 0.809 quality-adjusted life years per woman. Decreased quality of life was the most important predictor of direct health care and total costs. Costs were greater with increasing severity of endometriosis, presence of pelvic pain, presence of infertility, and higher number of years since diagnosis. **CONCLUSIONS:** The economic burden associated with endometriosis is high and is similar to other chronic diseases (diabetes, Crohn's disease, rheumatoid arthritis). It arises predominantly from productivity loss, and is predicted by decreased quality of life.

PIH21

THE POTENTIAL PUBLIC HEALTH BENEFIT OF PNEUMOCOCCAL CONJUGATE VACCINES IN THE KINGDOM OF SAUDI ARABIA

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OBJECTIVES: To evaluate cost–effectiveness of pneumococcal vaccination with 10-valent pneumococcal non-typeable Haemophilus influenzae protein-D vaccine (PHiD-CV) compared with 13-valent pneumococcal conjugate vaccine (PCV-13) and no vaccination in The Kingdom of Saudi Arabia (KSA). **METHODS:** A steady state model with a one-year time horizon was developed to project the impact of vaccination on the incidence of pneumococcal and non-typeable *Haemophilus Influenzae* (NTHi) infections in children aged 0-10 years. Data sources: Pneumococcal serotype distribution is based on 176 invasive *S. pneumoniae* isolates collected in KSA hospitals in 2005 to 2008. IPD, hospitalised pneumonia and acute otitis media (AOM) disease incidence rates were based on a study from 12 hospitals in KSA, data from Turkey and benchmarks with other countries. Vaccines coverage rates for IPD of 79.3 % and 83.9% for PHiD-CV and PCV-13, payer perspective, no herd protection and a (3+1) vaccination schedule was assumed. **RESULTS:** PHiD-CV and PCV-13 are projected to prevent more cases of invasive disease (724; 749 respectively) and equal number of pneumonia hospitalizations (510; 510 respectively) compared to no vaccination. PHiD-CV and PCV-13 are projected to prevent additional myringotomies (4783; 2365 respectively) and GP visits due to AOM (170,936; 84,518 respectively) compared to no vaccination strategy. Vaccinating a birth cohort with PHiD-CV or PCV-13 is expected to generate 8,966; 8,888 more QALYs compared to no vaccination. At vaccine steady state cost-savings related to disease burden reduction are $14.1M and $7.6M for PHiD-CV and PCV-13 respectively compared with no vaccination. Sensitivity analyses indicate that incidence rate of IPD has the biggest impact on results. **CONCLUSIONS:** Incremental cost-effectiveness ratios indicate that both vaccines are cost effective interventions. PHiD-CV dominates PCV-13 because it has a larger potential QALY gain and larger cost offset.

PIH22

COST EFFECTIVENESS OF AN INFANT PNEUMOCOCCAL CONJUGATE VACCINE PROGRAM IN CHINA

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OBJECTIVES: A 7-valent pneumococcal conjugate vaccine (PCV7) was launched as a Category II vaccine requiring out-of-pocket payment in China in 2008. This study evaluates the potential economic benefits of introducing a public financed City Immunization Program (CIP) to pay for PCV7 from a payer perspective. **METHODS:** A decision-analytic model was populated with local direct cost and seroprevalence data from case records of 3 hospitals (1 Children's Hospital; 2 Comprehensive Hospitals) and literature to estimate the clinical and economic impact of no PCV7 vaccination, PCV7 Category II listing, and PCV7 CIP in the city of Shenzhen. Various sources of data were used to estimate the primary statistics including age-specific incidence/mortality of invasive pneumococcal disease (IPD), pneumonia and otitis media, local patient demographics, and PCV7 efficacy from clinical trial data. The indirect effect on unvaccinated populations was considered by estimating the reduction in adult IPD cases following PCV7 programs published overseas, and was only applied in the CIP scenario where broad vaccine coverage could be achieved. A discount rate of 5% was applied, and one-way sensitivity analyses were performed as well. **RESULTS:** Under the current setting, the Category II vaccine PCV7 is not cost-effective due to the private market unit price and low penetration rate. However, vaccination of 154,721 children under 2 years old from a public financed CIP in Shenzhen would prevent 18 IPD, 5887 hospitalized pneumonia, 20020 outpatient pneumonia, and 10669 otitis media cases if indirect effects are included, compared to no vaccination program. From a payer perspective, a PCV7 CIP would achieve an ICER of RMB61, 243 (USD9, 141) per QALY versus no vaccination, and dominant versus Category II. **CONCLUSIONS:** Results from this study indicate a PCV7 CIP would be a highly cost-effective intervention from a public payer's perspective.

PIH23

COST-EFFECTIVENESS OF GUANFACINE EXTENDED RELEASE AS AN ADJUNCTIVE THERAPY TO A PSYCHOSTIMULANT COMPARED TO PSYCHOSTIMULANT MONOTHERAPY FOR THE TREATMENT OF ATTENTION DEFICIT/HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS

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OBJECTIVES: Attention deficit/hyperactivity disorder (ADHD) is a common psychiatric disorder with substantial clinical and economic implications. While psychostimulants are first-line pharmacologic treatment, up to 30% of ADHD children have suboptimal response to psychostimulants and require adjunctive therapy. Our objective was to analyze the cost-effectiveness of adding an alpha-2A agonist,